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Adaptation to climate change as a task for local authorities

Adaptacja do zmian klimatu jako zadanie władz lokalnych

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Keywords: climate change, adaptation, local communities, local government

Słowa kluczowe: zmiany klimatu, adaptacja, społeczności lokalne, samorząd lokalny

Abstract

International and national documents related to climate change and restriction of its effects emphasize the significant role of local authorities in adaptation to climate change. New tasks resulting from the necessity to adapt to climate change rest with a commune as the basic unit of local authority and a government community, which is an organized territorial system implementing particular tasks, having its own structure and applying appropriate procedures. This paper is focused on presenting and discussing the statutory tasks of communes with regard to adaptation to climate change, identified within the frame of the KLIMADA research project "Elaborating and implementation of a strategic plan of adaptation for sectors and areas sensitive to climate change".¹

¹ <http://ios.edu.pl/klimada/Adaptacja2070.pdf>

Streszczenie

Dokumenty międzynarodowe i krajowe odnoszące się do zmian klimatu oraz ograniczania skutków tych zmian podkreślają istotną rolę władz lokalnych w działaniach na rzecz adaptacji do zmian klimatu. Przed gminą jako podstawową jednostką samorządu terytorialnego i wspólnotą samorządową stanowiącą zorganizowany układ terytorialny oraz realizującą określone cele, mającą własną strukturę i stosującą odpowiednie procedury, stoją nowe zadania wynikające z potrzeby adaptacji do zmian klimatu. Celem niniejszego opracowania jest przedstawienie i omówienie ustawowych zadań gminy w aspekcie adaptacji do zmian klimatu, które zostały zidentyfikowane w ramach prac badawczych projektu KLIMADA „Opracowanie i wdrożenie strategicznego planu adaptacji dla sektorów i obszarów wrażliwych na zmiany klimatu”.²

² Ibidem

1. INTRODUCTION

Adaptation of local communities to climate change is a challenge, because the intensity of its effects varies among different areas, whereas community awareness of adaptation measures is limited.

Sensibility to effects of climate change depends on such factors as:

- physical hazards to a given area;
- level of social and economic development;
- adaptation abilities of the natural environment and human populations;
- health care and mechanisms of monitoring natural disasters;
- society awareness.

Measures with regard to adaptation are indispensable on all authority levels represented by the local government and administration – local, regional, national, European and international – but among all require the engagement of public administration, private sector and the citizens. Local authorities

with full knowledge on local conditions play a key role in allowing the citizens to undertake measures of adapting to climate changes on a local scale.

2. ADAPTATION TO CLIMATE CHANGE – ACTION PLANNING LEVELS AND TOOLS

Adaptation measures on local level are strictly related to activities on higher administration levels. Therefore, efforts on the integration of adaptation measures on development processes on regional and national levels, sectors and projects, should focus on creating conditions, plans and initiatives aiming to facilitate local entities in understanding the hazards related to climate change, and undertaking tasks intending to reduce their sensitivity to the effects of climate change. Such an approach is known as top-down planning. Simultaneously, many of these conditions, plans and initiatives should be created under social participation and at a significant input of local authorities and communities (down-

top planning). Entities on a local level should not only utilize the results of adaptation measures conducted by entities on a higher level, but take active participation in planning and implementing such measures in a microscale. Adaptation experiences on a local level should replenish higher administrative levels, due to which local strategies will be concordant with the documentation on a regional and national level and be the base to transfer knowledge to other local communities and sectors.

Planning and implementing such adaptation measures on a local level requires the engagement of many entities and organizations; however, the establishment of new administration agencies is not necessary. Therefore, the basic range of measures undertaken by the administration in the adaptation to climate change is encompassed in the Strategic Adaptation Plan 2020 (SAP 2020) in the following manner:

- 1) government administration – appropriate ministers (with subordinate units) will be responsible for the consideration of measures indicated in SAP 2020 in strategic documents, and in operational and legal documents and measures. The competence of appropriate ministers will include indicating the sources of funding, with a particular consideration of EU funding in the financial perspective 2014–2020;
- 2) province authorities – determining the adaptation directions on regional (province) level, including consideration of general trends indicated in SAP 2020. Directions of adaptation measures should be indicated in the strategies of province development with the consideration of regional, geographic, environmental, social and economic conditions. Depending on the decisions of appropriate executive agencies on province level, elaboration of regional adaptation strategies to climate change will also be possible;
- 3) local authorities – are a basic level of implementing measures protecting and limiting the effects of climate change (e.g. protection against floods, limiting the effect of heat waves). Local communities are the main actors of adaptation measures to climate change and all benefits and hazards identified for particular sectors are at the same time benefits and hazards for local communities.

A tool supporting local authorities in the process of adaptation to climate change is the interactive European internet platform CLIMATE-ADAPT³, whose task is to support entities responsible for shaping the politics on EU, national, regional and local levels, in the development of policies focused on the adaptation to climate change, and related measures. Adaptation means predicting unfavourable effects of climate change and undertaking appropriate measures in order to prevent or minimize the resulting damage.

The CLIMATE-ADAPT platform enables its users to access information and its integration and distribution with regard to:

- climate change expected in Europe;
- present-day and future exposure of countries, regions and sectors to climate change;
- national, regional and international adaptation measures and strategies;

³<http://climate-adapt.eea.europa.eu>

- adaptation case studies and potential future adaptation variants;
- internet tools supporting planned adaptation;
- research projects related to adaptation, documents containing the guidelines, reports on the sources of information, links, actualities and events.

Local authorities in Poland can gain knowledge on climate scenarios for their regions from <http://klimat.icm.edu.pl/> prepared in the framework of the KLIMADA⁴²project, focused on the preparation of scientific basis for the Strategic Adaptation Plan SAP 2020. The climate service for Poland is based on the results of EU ENSEMBLES⁵³project, which contains the results of eight regional cases of climate simulation for emission scenario SRES A1B and observation data in the regular network E-OBS⁶⁴. All fields have a spatial resolution of about 25 x 25 km, and time resolutions of 24h, monthly or seasonal. Statistics are calculated for scenario packets. The simulation takes into account the following parameters:

- mean 24h temperature,
- maximum 24h temperature,
- minimum 24h temperature,
- precipitation,
- mean wind,
- humidity,
- minimum humidity,
- radiation (SW),
- radiation (LW).

The predicted climate scenarios encompass a very wide time range, even till 2100, which allows the local authorities to obtain climate data to supply local developmental strategies both in longer and shorter time spans. Usually, local authorities plan their strategies for about 10 years. Besides social and economic forecasts, climate data should become the basis to build local developmental scenarios in the strategies, and particularly should be taken into consideration in spatial planning.

3. TASKS OF COMMUNAL AUTHORITIES RELATED TO ADAPTATION TO CLIMATE CHANGE

International and national documents related to climate change and restriction of its effects emphasize the significant role of local authorities in: undertaking institutional, strategic, planning, investment, informational and educational measures, prevention and adaptation to predicting unfavourable phenomena and processes.

New tasks resulting from the necessity to adapt to climate change rest with a commune as the basic unit of local authority and a government community, which is an organized territorial system implementing particular tasks, having its own structure and applying appropriate procedures. A commune, whose status

⁴<http://klimada.mos.gov.pl>

⁵<http://www.ensembles-eu.org/>

⁶<http://eca.knmi.nl/>

Table 1. Local authorities' tools for development policy implementation

Administrative and legal tools	Legal and property tools	Information tools	Infrastructural tools
Normative, planning, regulation, payment, intervention, compensation and prevention tools	Tools related to property management	All forms of encouraging and discouraging to certain activities	Tools designed for influencing the development of the infrastructure and investments

Source: Own compilation



Source: Own compilation

Chart 1. Commune tasks related to climate change adaptation

is regulated by the Act on Local Government from 1990⁷ and the Act on District Government from 1998⁸, possesses the basic instruments allowing to fulfil these tasks on local level. Although the acts give a mandatory determination of the agencies, their tasks, competences and mutual relationships, and partly regulate their organization, the communes have freedom in the creation of a full organizational structure. This is of key significance for the administration method which comprises a set of tasks undertaken to induce a desirable course of processes and phenomena within the local government. Administration, which is of regulative character, causes specific behaviour of persons and other subjects acting within a territorial unit. With regard to adaptation to climate change it should be emphasized that management in a commune should not be restricted only to administration, but should be active and creative, implementing decisive, executive and controlling processes. It should also be remembered that the undertaken tasks depend not only on internal conditions but are strictly related to the surroundings which influence them to a larger or smaller degree.

During adaptation to climate change, the hierarchy of authority levels should be taken into account, that is, application of instruments by higher levels (national, province) that form conditions or

restrictions, in which units of the lowest level (commune) function. Measures undertaken to adapt to climate change are part of local policy, which comprises partial (e.g. sector) policies. Local policy is a planned and organized activity of communal agencies and other units subordinate to these agencies, which have at their disposal measures attributed to authority (e.g. coordination, constraint, control and legal), selects the aims serving local communities and the measures of their accomplishment.

An example of sector policy, significant for adaptation to climate change may be the spatial policy of a commune reflected in the study of conditions and directions of spatial development. Spatial policy influences any type of human activity by shaping the rules of spatial management. Its range is very wide and encompasses all spatial conditions and requirements resulting from other policies. It is of key significance in managing commune development and should be treated as an important tool of adaptation to climate on local level.

Other tools that local authorities use to accomplish their development policy are described in a table 1 presented below. Considering the results and character of the changes stimulated by the commune, the tools can be subdivided into those influencing:

- the spatial structure, in which the commune acts, such as local studies and plans, spatial development investments;
- forms of financing – from local and external resources;
- legal regulation and administrative order;
- information and state of knowledge on the commune and its surroundings.

⁷The Announcement of the Marshal of the Sejm of the Republic of Poland of 11 March 2013 on the publication of the consolidated text of the Act on Local Government (Journal of Laws 2013, pos. 594).

⁸The Announcement of the Marshal of the Sejm of the Republic of Poland of 11 March 2013 on the publication of the consolidated text of the Act on District Government (Journal of Laws 2013, pos. 595).

Table 2. Commune strategic documents contents

Strategic document	Structure and contents
Local development strategy	General plan of a systemic, long-range activity of the authorities and all social partners with regard to the chances and threats resulting from diverse surroundings and activities of other entities, shaped by the values and options approved by the local community, based on an internal force potential and including internal weakness.
Sector programs and plans	Prepared by the commune on an obligatory basis, such as: <ul style="list-style-type: none"> – communal program of environmental protection including the requirements of state ecological policy and program of environmental protection in the district and province, integrated with the strategy of sustainable development in the commune and with other sector programs; – assumptions to the plan of supply in heat, electric energy and gas fuels or the plan of supply in heat, electric energy and gas fuels, which should transpose and be strictly linked with the policies, programs and plans created by the commune and energy companies, and other participants of the energy market, and most of all with the strategy of communal development, study of conditions and directions of communal spatial management and local spatial management plans, and communal environmental protection program; – study of conditions and directions of communal spatial management (communal spatial policy), which is a coordinating document, reflecting spatial transposition of sector policies, plans and partial programs into spatial decisions; – multiannual program of managing communal housing stock.
Sector policies, programs and plans prepared by the commune and implemented in the frame of sustainable development	Prepared by the commune, such as: <ul style="list-style-type: none"> – local plans of spatial management, – housing policy in the commune*, – educational policy**, – program of water-sewage management, – policy of social assistance, – transportation policy (often as policy of sustainable transportation or strategy of sustainable development of the transportation system), – program of preservation of historical monuments, – revitalization program, – program of removal of asbestos and asbestos-containing products, – program of cooperation with non-governmental organizations, – operational program of protection against floods.

Source: Own compilation

*A communal task is to create conditions fulfilling the housing needs in the community.

**Educational tasks of the commune resulting from the Education System Act includes providing education, upbringing and pre-school assistance (also with integrated classes), in special nursery schools and other forms of pre-school upbringing, primary schools and middle schools (also with integrated classes).

Effective commune policy of adaptation to climate change may use all available types of instruments as operational tools. The possibilities and range of policy tool application by the commune with regard to adaptation to climate change depend mainly on its type and thus the granted competencies.

The most significant commune tasks related to adaptation to climate change are presented in the chart 1 below.

The range of these communal tasks and competencies is determined by the rules of sector laws, such as the Act of Spatial Planning and Development, Nature Conservation Act, Energy Law, Water Law, Environment Protection Act, Waste Act, Act on Protection of Agricultural and Forest Land, Act on Real Property Management, Act on Maintaining Cleanliness and Order in Communes, Act on the State of Natural Disaster and Act on Crisis Management.

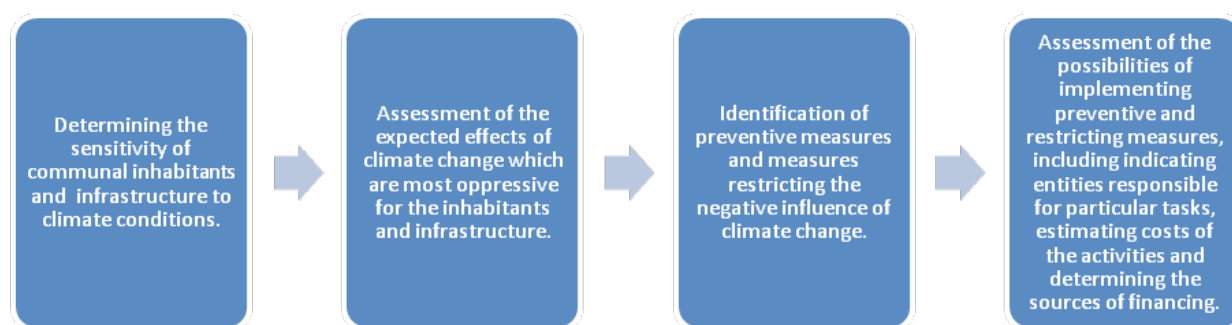
In the existing legal order, the rules establishing acts of local law are included in different laws. Authorizations to establish acts of local laws by units of local government (communes and districts)

can be found in the constitutional laws establishing these units.

Communal tasks include establishing and performing acts of local law with regard to other regulations. According to the Act on Local Government, the commune has the law to establish acts of local law, in force within the commune, and related to

- internal structure of commune and auxiliary units;
- organization of communal offices and institutions;
- rules of managing communal property;
- rules and modes of using communal objects and devices of public utility.

Based on the regulations of the Act on Local Government, acts of local law are established by the communal council in form of a resolution. They become common rules in force within the commune. In sudden cases, routine regulations may be issued by the commune head or town mayor in form of an ordinance. This ordinance is approved at a subsequent session of the commune council. Acts of local law are thus regulations commonly in force



Source: Own compilation

Chart 2. Communal climate change adaptation plan formulation process

within the commune, established by its organs based on statutory authorizations. Depending on the legal basis used to establish normative acts and regulation rules, they can be subdivided into implementing rules and routine regulations.

Implementing rules are created by the commune council in the form of a resolution – they include resolutions on tax levels, maintenance of cleanliness and order in the commune, local spatial management plans, forms of natural protection and determining the modes of consulting acts of local law. Implementing rules include also resolutions of the commune council undertaken to implement the desires of the citizens (in a communal referendum).

Routine regulations warrant and ban specific behaviours, with the possibilities of introducing penalties for their violation. They play an important role in the case of sudden weather phenomena (storms, hurricanes, torrential rains), because, by being established in a matter of urgency by the commune head or town mayor, they allow for conducting fast actions of removing breakdowns, assessing threats and losses.

In the range of its competencies and policy, the commune elaborates strategic documents, programs and plans, whose ranges are related to adaptation to climate change. Description of strategic documents contents is provided in a table 2 below.

4. COMMUNAL CLIMATE CHANGE ADAPTATION PLAN

Elaboration of the communal plan of adaptation to climate change is an important task of communal organs. At present, this is an obligatory task for cities with over 100,000 inhabitants, because large cities are considered as most susceptible to negative effects of climate change. Nevertheless, elaborating plans of adaptation to climate change seems also justified for cities with less than 100,000 inhabitants and communes, in which a high threat from extreme weather phenomena has been diagnosed.

The process of elaborating a communal plan of adaptation to climate change includes the sequence of four steps presented in chart 2 below.

When constructing local adaptation strategies, both economic and social costs of the effects of climate change should be taken into account.

The economic costs of climate change result from several factors as presented in chart 3 below.

Social costs include those that are related to the deterioration of social conditions of the inhabitants and are presented in chart 4 below.

5. COMMUNAL CRISIS MANAGEMENT SYSTEM

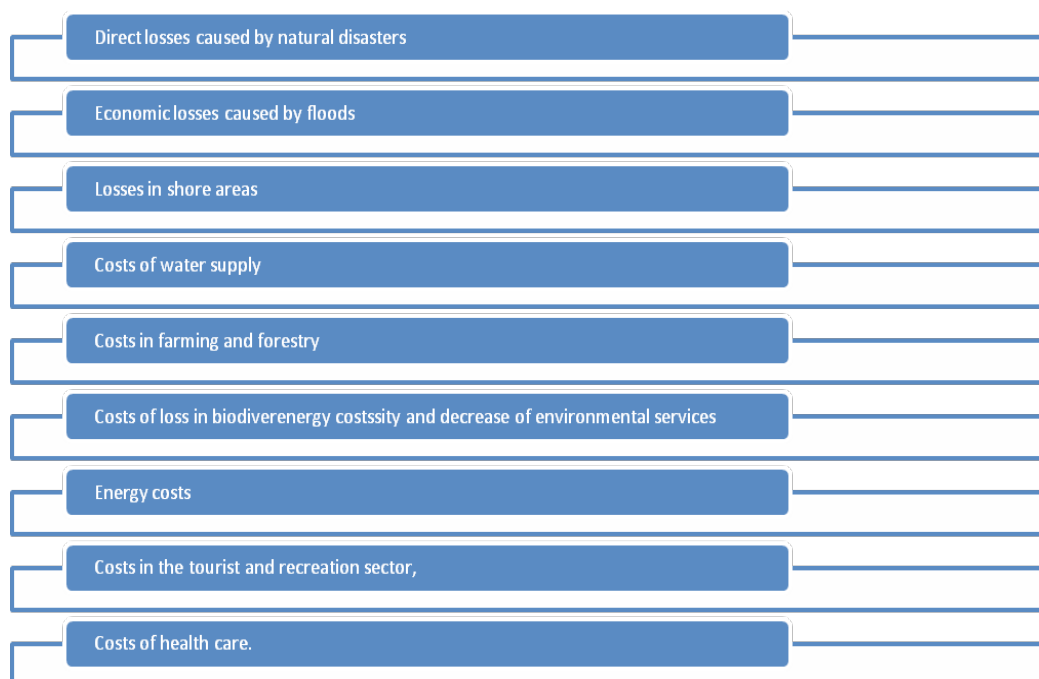
A significant issue related to the implementation of a communal plan of adaptation to climate change is the integration of adaptive measures and the system of crisis management in the commune. The activity of public administration organs with regard to crisis management is based on the Law on Crisis Management from 26 April 2007⁹. The competent organ in crisis management in the commune is the commune head or town mayor as chairman of the commune council. The most urgent tasks of the village commune head or town mayor in crisis management include:

- chairing the monitoring, planning, regulation and removal of threat effects within the commune,
- implementing tasks with regard to civil planning,
- management, organization and conducting of training and exercises in crisis management,
- conducting activities resulting from the operation plan of functioning in communes and town communes,
- preventing, counteraction and removal of effects of terrorist attacks,
- cooperation with the Head of the Internal Security Agency with regard to counteracting, preventing and removal of the effects of terrorist attacks,
- organization and implementation of tasks related to the protection of critical infrastructure.

Implementation of tasks related to civil planning on the level of commune heads or town mayors include the implementation of recommendations to the communal plan of crisis management, and elaboration and presentation of a communal plan of crisis management to the district governor for approval.

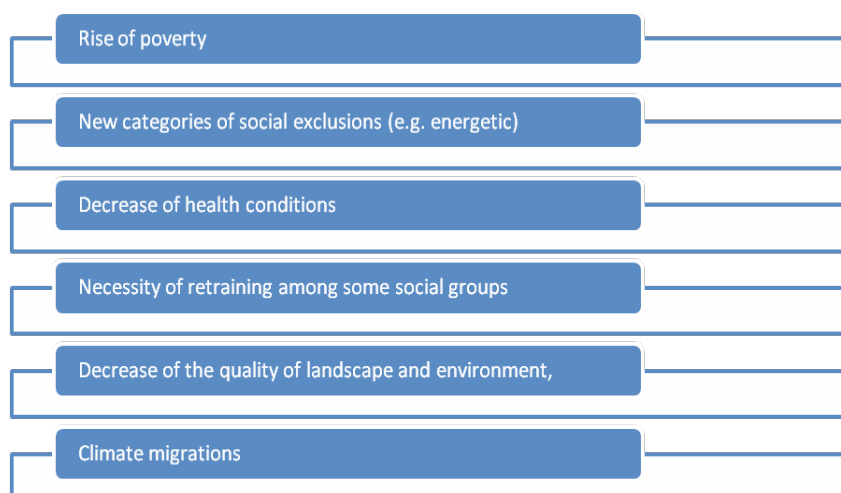
Tasks with regard to crisis management are conducted by the commune head or town mayor using the correct organizational section of the commune (town) office for crisis management. An auxiliary organ of the commune head or town mayor in ensuring the accomplishment of tasks in crisis management is

⁹Law on Crisis Management of 26 April 2007 (Journal of Laws 2007, no. 89, pos. 590 with later changes).



Source: Own compilation

Chart 3. Economic costs of climate change



Source: Own compilation

Chart 4. Social costs of climate change

the Communal Group of Crisis Management (CGCM) constituted by the commune head or town mayor, who determines its composition, organization, headquarters and work mode.

With regard to crisis management, the commune head or town mayor is responsible for the accomplishment of the following tasks within the commune (town/city):

- 24h alarming of the members of the commune group of crisis management, and in case of crisis – ensuring a 24h standby for information flow and documentation of the conducted activities;
- cooperation with centres of crisis management in public administration organs;

- supervision of the functioning of a detecting and alarming system and an early warning system;
- cooperation with environment monitoring entities;
- cooperation with entities conducting rescue, search and humane operations, accomplishment of tasks of continuous standby to increase the defence readiness condition.

Operative conducting of task accomplishment with regards to crisis management, the commune head or town mayor may constitute supernumerary Communal (Town) Centres for Crisis Management (CCCM). These centres ensure that information flow for the requirements of crisis management and implement

operational tasks ascribed to centres for crisis management. The organization, headquarters and work mode of the members of the communal centre for crisis management, including the mode of 24h alarming of the members of the group for crisis management and the mode of ensuring 24h information flow in crisis cases are determined by the commune head or town mayor.

6. SUMMARY

The key entities in adaptation measures to climate change are local communities which become the benefactors of the advantages resulting from this change and the first victims of the resulting threats. All advantages and threats identified for particular sectors should therefore be related to the level of local communities. As a result, all tasks resulting from the adaptation of local communities distinguished in the Strategic Adaptation Plan till 2020 have been presented in relation to sectors, including water management, energy economics, health, farming, transportation, construction, protection of biodiversity, forestry and tourism. The domain that coordinates sector adaptation measures on a local level is spatial planning.

With a commune, as the basic unit of local authority and a government community, which is an organized territorial system

realizing particular tasks, having its own structure and applying appropriate procedures, rests new tasks resulting from the necessity to adapt to climate change.

The main tasks of local authorities related to adaptation to climate change include:

- preparing the community to an increased risk of the occurrence of natural disasters, such as floods, draught, large fire, hurricane, intense snow fall, extreme heat waves or frost, slope movement;
- an elaboration of action plan in the case of natural disasters, including evacuation plans;
- including flood risks occurring in water regions into communal studies and spatial management plans;
- protection of communal infrastructure (roads, buildings) against the effects of natural disasters;
- preparation of plans of rescue and preventive measures in cases of extreme heat waves (increased standby of medical personnel, support for risk groups, for example, the elderly people);
- protection of engineering and road infrastructure and buildings situated on river banks against floods;
- provision of standby systems of water and electric energy supply.

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